
ECE 375 PRELAB FOR LAB 7

Timers/Counters

Lab Time: Friday 4 - 6

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PRELAB QUESTIONS

To complete this prelab, you may find it useful to look at the full ATmega128datasheet. If you consult any online sources to help answer the prelab questions, you must list them as references in your prelab.

1. List the correct sequence of AVR assembly instructions needed to store the contents of registers R25:R24 into Timer/Counter1's 16-bit register, TCNT1. (You may assume that registers R25:R24 have already been initialized to contain some 16-bit value.)

out TCNT1H, r25

out TCNT1L, r24

2. List the correct sequence of AVR assembly instructions needed to load the contents of Timer/Counter1's 16-bit register, TCNT1, into registers R25:R24.

in r24, TCNT1L

in r25, TCNT1H

3. Suppose Timer/Counter0 (an 8-bit timer) has been configured to operate in Normal mode, and with no prescaling (i.e., $clkT0 = clkI/O = 16 \text{ MHz}$). The decimal value "128" has just been written into Timer/Counter0's 8-bit register, TCNT0. How long will it take for the TOV0 flag to become set? Give your answer as an amount of time, not as a number of cycles

Given the Equation: $Delay_{Normal} = \frac{(MAX+1-value)*prescale}{clk_{I/O}} = \frac{(255+1-128)}{62.5ns} = 2.048ms$